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MAY 15.

The President, Dr. RUSCHENBERGER, in the chair.

Twenty-seven members present.

Remarks on Gregarines.—Prof. LEIDY remarked that his recent study of the Rhizopods had led him once more to make an examination of some of the Gregarines, regarded as pertaining to a nearly related class.

The Gregarines are especially parasites of the Articulata, most of the known forms having been found in insects, crustaceans, myriapods, and annelides. Most of those observed by himself were found in vegetable and dirt feeders. They frequently occupy the alimentary canal, but in some animals occupy other organs or the perivisceral cavity. With few exceptions, the Gregarines at maturity consist of a comparatively large nucleated cell, which for convenience may be named the body cell, continuous at one pole with a small non-nucleated cell, which in like manner may be viewed as the head cell. Both cells are filled with fine globular granules, which in mass give the Gregarines a milk-white appearance. No mouth or trace of intestinal organs exists. The outer wall of the cells is a thick, structureless, contractile endosarc; and within this, in the body cell, there is often perceptible, as in *Gregarina larvata* of our common *Julus*, a well-marked longitudinally striated and apparently muscular layer.

The motions of the Gregarines consist of a kind of peristaltic action of the wall of the body cell proceeding from one to the other end.

In the Gregarines, so common in several species of our earthworms, the head cell is absent, and therefore is very properly viewed as of a different genus from the more ordinary *Gregarina* under the name of *Monocystis*. The *Monocystis agilis* is sausage-like in form, and is usually from $\frac{1}{3}$ to $\frac{2}{3}$ of a millimetre in length. In movement its contractions may commence at one end and proceed towards the opposite end, or it may commence at both ends proceeding towards the middle, or may commence in the latter position and proceed towards the ends.

From the researches of Lieberkühn and others, it appears that the Gregarines of earthworms assume a globular form and become encysted, and the granular contents are in a greater measure resolved into navicula-shaped germs, which have been named pseudonaviculæ or navicellæ or psorosperms. Lieberkühn was led to consider the amœboid perivisceral corpuscles of the earthworm, as amœba-like embryos derived from the navicellæ, but it is very doubtful whether there is any relationship whatever between the

two. Both Gregarines and navicella-cysts are met with in the intestine of our common earthworm, but the cysts are to be found most frequently and abundantly in the sperm vesicles. In the six vesicles of an earthworm Prof. Leidy had counted 1540 mature navicella-cysts, together with a number of groups of immature cysts. The mature cysts, readily visible to the naked eye, as minute pearly-white globules, by transmitted light have a peculiar pale blue hue. They measure about $\frac{1}{4}$ of a millimetre in diameter. A cyst burst open spread its navicellæ over a millimetre square, and was estimated to contain about 2500. These were quite uniform in size, and measured 0.0133 mm. long and 0.00665 broad.

E. Van Beneden has clearly traced the development of the *Gregarina* of the Lobster from Amœba-like embryos, so that it is not improbable that similar embryos may be derived from the navicellæ.

The Gregarines are usually viewed as constituting the lowest class of the Protozoa, and hence the lowest of animals. From their structure and mode of development, Prof. L. considered them as holding a higher rank than Rhizopods, and occupying a position intermediate to these and the Infusoria.

Prof. L. further stated that in a large earthworm, *Lumbricus terrestris*, from the yard of his residence, the posterior pair of sperm vesicles alone contained upwards of a thousand navicella-cysts, besides several thousand Gregarines, *Monocystis agilis*, exhibiting the varieties of condition, such as have been represented by Schmidt, Lieberkühn, and others. Many of the Gregarines were invested with motionless cilia, while other actively contracting individuals possessed no trace of these appendages. Some of the Gregarines further exhibited transition stages towards transformation into navicella-cysts. The latter differed from those previously mentioned in having but a single thin membranous layer for their wall instead of many layers.

Prof. L. added that our earthworms, which appear to be the same as the common European species, likewise appear to be infested with the same variety and kind of parasites. Among the latter he had repeatedly observed the infusorian *Anoplophrya lumbrici*, and also several different nematoids. One of these, which he had found in the sperm vesicles, appeared to be undescribed. It was certainly different from the *Dicelis filaria* found in the same organs by Dujardin. It appears nearly related with *Anguillula*, and may be regarded as such with the name of *A. melancholica*. Its characters are as follows: Body cylindrical, tapering at the ends, distinctly annulated. Head truncated, with the vertex convex, and perforated centrally by the mouth, and defined from the sides by an elevated annulus. Tail conical, and ending in a short, thick conical process. Mouth a minute round pore, unarmed; pharynx a short narrow tube; œsophagus long, cylindroid, widening posteriorly, and rather abruptly narrowed at

the anterior extremity; gizzard wider than the œsophagus, cylindrical and rounded at the extremities; intestine straight, intensely black or blackish brown. Length from 3 to 4 millimetres; thickness at middle 0.15 m. Length of œsophagus 0.5 m., of gizzard 0.125 m., thickness 0.075 m., thickness of intestine 0.05 m., length of tail from anal aperture 0.175 m. Color black, with the anterior end white. All females. Sometimes upwards of a dozen found in the sperm vesicles of a single earthworm.

MAY 22.

The President, Dr. RUSCHENBERGER, in the chair.

Forty-three members present.

The death of Matthew Baird was announced.

On Chilomonas.—Prof. LEIDY remarked that while strolling along the sandy beach at Cape May, N. J., he observed that in a number of places, where the water of hollows had sunken away in the sand, a thin yellowish-green film colored the surface. A portion of this green matter scraped up was put in a bottle with sea water. The heavier sand subsided, and the green matter remained in suspension, giving the water an olive-green color, reminding one of the colored turbid liquor decanted from a jar of stale preserved olives. The color was suspected to be due to the presence of diatoms, but on microscopic examination it proved to be caused by multitudes of a greenish Monad, probably pertaining to the genus *Chilomonas*. The minute flagellate infusorian is discoid-oval in form, with a slight emargination laterally a short distance posterior to the fore extremity. The emargination apparently indicates the position of the mouth, and from it projected a single delicate flagellum, scarcely distinguishable. At times the little creature assumed a more circular shape, or became reniform. It moved actively forward, rolling over from one side to the other, and rapidly vibrated the flagellum. Under a high power the animal appeared transparent and colorless or faintly bluish, with two or three large balls of a yellowish-green hue, and several transparent, colorless, and well-defined globules. In size the monad ranged from the $\frac{1}{4000}$ th to the $\frac{1}{2400}$ th of an inch in length. An average-sized individual measured 0.008 mm. long, 0.006 broad, and 0.004 thick.

On Enstatite.—Dr. GEORGE A. KÖNIG placed on record the occurrence of *Enstatite* as one of the associates of corundum in Georgia. The material came to Dr. A. E. Foote from a dealer in that State, with other specimens, showing the characteristic associations of corundum, spinel, and chlorite. At first sight the mineral appears like fibrolite, altering into damourite, so well known from corundum localities.